

Unit 5

Factoring

Day 1

Factoring Using Integers - Part 1

Factoring Using the GCF - COMMON MONOMIAL FACTOR

1) $-8a^5 + 24a^3 - 44a^2$

$$-4a^2(2a^3 - 6a + 11)$$

Factoring Using the GCF - COMMON BINOMIAL FACTOR

2a)

$$5(x+3)^2 - 7(x+3)$$

$$\Rightarrow (x+3)[5(x+3) - 7]$$
$$(x+3)(5x+15-7)$$
$$(x+3)(5x+8)$$

$$12 = 2^2 \cdot 3$$

$$12 = 4 \cdot 3$$

2b)

$$5(x+3)^2 - 15(x+3)$$

$$5(x+3)[(x+3) - 3]$$
$$5(x+3)(x)$$
$$5x(x+3)$$

FACTORING THE DIFFERENCE OF SQUARES

1) $4a^2 - 25$

$$(2a+5)(2a-5)$$

2) $16x^{2r} - y^{6s}$

$$(4x^r + y^{3s})(4x^r - y^{3s})$$

$$3) (x+y)^2 - 25 \quad a=x+y$$

$$\begin{aligned} & a^2 - 25 \\ & (a+5)(a-5) \\ & [(x+y)+5][(x+y)-5] \\ & (x+y+5)(x+y-5) \end{aligned}$$

$$4) 16x^8 - 1$$

$$\begin{aligned} & (4x^4 + 1)(4x^4 - 1) \\ & (4x^4 + 1)(2x^2 - 1)(2x^2 + 1) \end{aligned}$$

FACTORIZING PERFECT SQUARE TRINOMIALS

$$1) \quad 9m^2 + 30m + 25$$
$$(3m + 5)^2$$

$$2(3m \cdot 5) = 30m$$

$$2) \quad x^6 - 14x^3 + 49$$
$$(x^3 - 7)^2$$

$$x^6 - 4$$

$$(x^{\cancel{3}} - 2)(x^{\cancel{3}} + 2)$$

FACTOR BY GROUPING - "GIVE AND TAKE"

1)

$$\begin{aligned} & (a^2 - ab) + (-5a + 5b) \\ & (a^2 - ab) + (-5a + 5b) \\ & a(a-b) + -5(\underline{a-b}) \\ & \underline{(a-b)}(a - 5) \end{aligned}$$

2)

$$\begin{aligned} & m^2 - 4n - 4m - n^2 \\ & (m^2 - n^2) + (-4n - 4m) \\ & (m-n)(m+n) + -4(n+m) \\ & (m+n)(m-n-4) \end{aligned}$$

REVERSE FOIL/PRODUCT METHOD

ONE PROBLEM - FOUR WAYS!

1st way - factor by grouping (AND CHECK)

$$\begin{array}{r} 6 \cdot -15 \\ -90 \\ \hline 10 \cdot 9 \end{array}$$

$$6x^2 + x - 15$$

$$(6x^2 - 9x) + (10x - 15)$$

$$3x(\underline{2x-3}) + 5(\underline{2x-3})$$

$$(2x-3)(3x+5)$$

2nd way - box method (AND CHECK)

$$6x^2 + x - 15$$

3rd way - "BEST" method AND CHECK

$$6x^2 + x - 15$$

4th way - Educated guessing AND CHECK

$$6x^2 + x - 15$$

HOMEWORK:

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